27. NOTES ON RARITY AND OCCURRENCE OF *DROSERA INDICA* L. (DROSERACEAE) IN GUJARAT STATE, INDIA

While working on the project "Plant Biodiversity Survey in South Gujarat", the taxon *Drosera indica* L. was collected and identified for the first time from Dabkhal (Tal. Kaprada, Dist. Valsad) forest area (South Gujarat) in Gujarat. This taxon is found in a typical location, i.e. hilly open grasslands, in association with *Eragrostis ciliaris*, *Centranthera indica*, *Rhynchospora wightiana*, *Spermacoce hispida*, *Zornia gibbosa*. *D. indica* is an ephemeral taxon, which blooms in September for 8 days.

Interestingly, when we collected it, it was hidden in grasses and we were able to collect only 4-5 plants within an area of 2-hectare open grazed pastureland. *D. indica* is a very rare taxon and is a new record for Gujarat State. It has been reported earlier from the ghats of Khandala-Mahabaleshwar and Marathwada. Its presence here proves the continuity of the vegetation from the Western Ghats to the forests of Gujarat State.

The locality is on the Dharampur-Dabkhal road, four kilometres before Dabkhal, on a roadside adjacent to agricultural fields. It grows only on well-grazed soil among grasses.

The location is in urgent need of conservation.

Drosera indica L. Sp. Pl. 282. 1753; C.B. Clarke, in Hook.f. Fl. Brit. India 2: 424. 1878; Cooke, Fl. Pres. Bombay 1: 499. 1958 (Repr. ed.).

Herbs, slender, caulescent, up to 20 cm high with glandular-hairy stems. Leaves exstipulate; lower leaves recurved, upper leaves erect, filiform up to 3 cm long; shortly petioled. Inflorescence leaf-opposed. Flowers pink; sepals 5, acute; petals obovate. Capsules 3-valved. Seeds obovoid and strongly ridged.

Fl. & Fr.: October-November.

Distribution: Very rare, collected only once and only 4-5 plants from open grazed pastureland in Dabkhal forest areas.

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28. A NOTE ON *ATHYRIUM SCHIMPERI* MOUG. EX FEE (ATHYRIACEAE: PTERIDOPHYTA) IN INDIA

Athyrium schimperi Moug. ex Fee has been reported in India from the western Himalaya, Sikkim, Darjeeling, Arunachal Pradesh, Rajasthan and Madhya Pradesh and grows commonly and abundantly, especially in the Himalayan region (Clarke 1880; Beddome 1883, 1892; Hope 1902; Dixit 1984; Fraser-Jenkins 1997; Chandra 2000; Khullar 2000; Dixit and Kumar 2002; Pande and Pande 2003). It is made of two subspecies - *schimperi* from east Africa and *biserrulatum* (Christ) Fras.-Jenk. from west Africa and Sino-Himalaya. *A. schimperi* subsp. *schimperi* is not known to occur from Sino-Himalaya. However, Chandra (2000) and Khullar (2000) have placed *A. biserrulatum* Christ in the synonymy of *A. schimperi*.

According to Fraser-Jenkins (pers comm.), Ching (1983) noted the close affinity of the Himalayan plant to the African one, but was presumably unable to accept that the two could be conspecific vicariants. The characters which Ching 1983 gave to differentiate between the two are common to both the subspecies. It appears that Ching's concept of the African *A. schimperi* resulted from observing some specimens of the dissected species without rhizome that were actually that of *Athyrium scandicinum* (Willd.) Presl, but commonly labelled as *A. schimperi* in various herbaria. However, Ching (1983) referred the Sino-Himalayan plant material as *Athyrium biserrulatum* and kept them separate from *A. schimperi*. The East African plants, including the type of *A. biserrulatum* as stated by Khullar (2000), are slightly different in having narrower, more cuneate pinnule lobes, which tend to be slightly more distant from each other. However, some plants from the drier areas are intermediate. Fraser- Jenkins (1997) has suggested that it is best to separate the east African plants as subsp. *schimperi* as opposed to the West African and Sino-Himalayan plants, which belong to subsp. *biserrulatun* (Christ) Fras.-Jenk.

Fraser-Jenkins (pers comm.) further adds that if the rhizome is not collected it can be difficult to distinguish some

plants of *A. flabellulatum* (Clarke) Tard. from *A. schimperi* subsp. *biserrulatum*; similarly, luxuriant plants of *A. rupicola* (Edgew. ex. Hope) C. Chr. can look like narrower plants of *A. schimperi* subsp. *biserrulatum*. But both species have thick, upright apices to their rhizomes with the fronds arising together in a crown-like arrangement, not the distinctively long- creeping, thin with separate fronds of *A. schimperi* and their lowest pinnae are also different.

It is therefore suggested that the Sino-Indian materials of *A. schimperi* be treated as *A. schimperi* subsp. *biserrulatum* (Christ) Fras.-Jenk. in Indian fern literature.

Athyrium schimperi Moug. ex Fee subsp. ***biserrulatum*** (Christ) Fras.-Jenk., New Sp. Syndr.Indian Pterid. & Ferns Nepal: 60 (1997); *Athyrium biserrulatum* Christ, Bull. Acad. mt. Geogr. Bot. Mans 17: 135 (1907). *Athyrium schimperi* (Moug. ex Fee) A.Br. in Schweinf.,Beitr. Fl. Aethiop. 1: 224 (1867), non (Hook) J. Smith (1875); Dixit, Census Indian Pterid.:129 (1984); Chandra, Ferns India: 134 (2000); Khullar, Ill. Fern Fl. West Him. 2:73. t. 26 (2000). *Asplenium filix-femina* Bernh. var. *polysporum* (Clarke), Trans. Linn. Soc. Lond. 2Bot. 1: 493. t. 61(1888). *Athyrium filix-femina* (L) Roth var. *polysporum* (Clarke) Bedd., Handb. Ferns Brit. India: 170 (1883). *Asplenium filix-femina* Bernh. var. *schimperi* (Moug. ex Fee) Clarke & Baker, J. Linn. Soc. Lond. 8: 12 (1888). *Athyrium polysporum* (Clarke) Ching ex Mehra & Bir, Amer. Fern J. 50: 289 (1960). *Athyrium wumonshanicum* Ching in Ching & Hsieh, Acta Bot. Bor.-Occ. Sin. 6: 20 (1986).

Rhizome thin, long-creeping, occasionally branching. Stipe long, with few scattered, pale brown, narrow scales towards the base, stipe base dark, rest of stipe and rachis pale or stramineous. Fronds arising at intervals along the rhizome. Lamina lanceolate to ovate-lanceolate, widest above or just above the middle, the lowest pinnae with rather a wide gap between them and the next pair, shorter than the second pair, but frond base somewhat truncate, herbaceous; pinnae triangular-lanceolate, wide, pinnate, becoming bipinnatifid in large plants, widely separated below, more or less contiguous above; pinnules nearly symmetrical above their axes or becoming slightly more developed at their acroscopic bases, narrowly attached to the costa but often slightly adnate and usually joined at their bases by a narrow wing of laminar tissue, triangular-lanceolate, apices acute, margins prominently lobed to about half their depth on each side or sometimes more, with somewhat narrow, acute lobes, the lobes and apices have prominent, long-acute teeth; costae bear weak, short setae above near the pinna-apices; costules have small crested ridges above. Sori crowded all over the lower surface of the lamina, usually rather large, hippocrepiform to sub-reniform, becoming confluent, indusiate; indusia prominent, large, but shrivelling markedly on maturity. Spores dark brown, perinate; perine broad, translucent, convoluted into folds forming ridges.

Ecology: Abundant throughout the western Himalaya, becoming somewhat less common further into the Himalaya in the east and occurs at mid- to higher altitudes in the outer and mid-ranges of the Himalaya between 1800 and 3500 m along streams and grassy slopes or road banks in forested areas, sometimes forming its pure stands.

Distribution: India (Kashmir, Jammu, Himachal Pradesh, Uttaranchal, Darjeeling, Sikkim, Arunachal Pradesh, Madhya Pradesh, Rajasthan), Pakistan, Nepal, Bhutan, N. Myanmar, S.E. Tibet, S.W. China, W. Africa (Cameroon, Nigeria, Ghana, Liberia and Guinea).

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REFERENCES

Beddome, R.H. (1883): A Handbook to the Ferns of British India, Ceylon and Malaya Peninsula. Thaker Spink & Co., Calcutta. Pp. 1-500.

Beddome, R.H. (1892): Supplement to the Ferns of British India, Ceylon and Malaya Peninsula with Supplement. Thaker Spink & Co., Calcutta. Pp. 1-110.

Chandra, S. (2000): The Ferns of India (Enumeration, Synonyms & Distribution). International Book Distributors. Dehradun. Pp. 1-459.

Ching, R.C. (1983): Taxonomic notes on some N.W. Himalayan ferns. *Acta Bot. Austro-Sin. 1*: 17-25.

Clarke, C.B. (1880): A review of the ferns of northern India. *Trans. Linn. Soc. Lond.II (Bot.) 1*: 425-611.

Dixit, R.D. (1984): A Census of Indian Pteridophytes. Botanical Survey of India, Howrah. Pp. 1-177.

Dixit, R.D. & R. Kumar (2002): Pteridophytes of Uttaranchal (A Checklist). Bishen Singh Mahendra Pal Singh, Dehradun. Pp. 1-159.

Fraser-Jenkins, C.R. (1997): New Species Syndrome in Indian Pteridology and Ferns of Nepal. International Book Distributors, Dehradun. Pp. 1-403.

Hope, C.W. (1902): The ferns of north-western India including Afghanistan, the Trans-Indus protected States and Kashmir. *J. Bombay nat. Hist. Soc. 14*: 252-266.

Khullar, S.P. (2000): An Illustrated Fern Flora of the West Himalaya. Vol. II. International Book Distributors, Dehradun. Pp 1-538.

Pande, H.C. & P.C. Pande (2003): An Illustrated Fern Flora of the Kumaon Himalaya. Bishen Singh Mahendra Pal Singh, Dehradun. Pp. 1-372.